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A Report of Fifty Cases of
Extraction of Cataract
without Iridectomy.

BY
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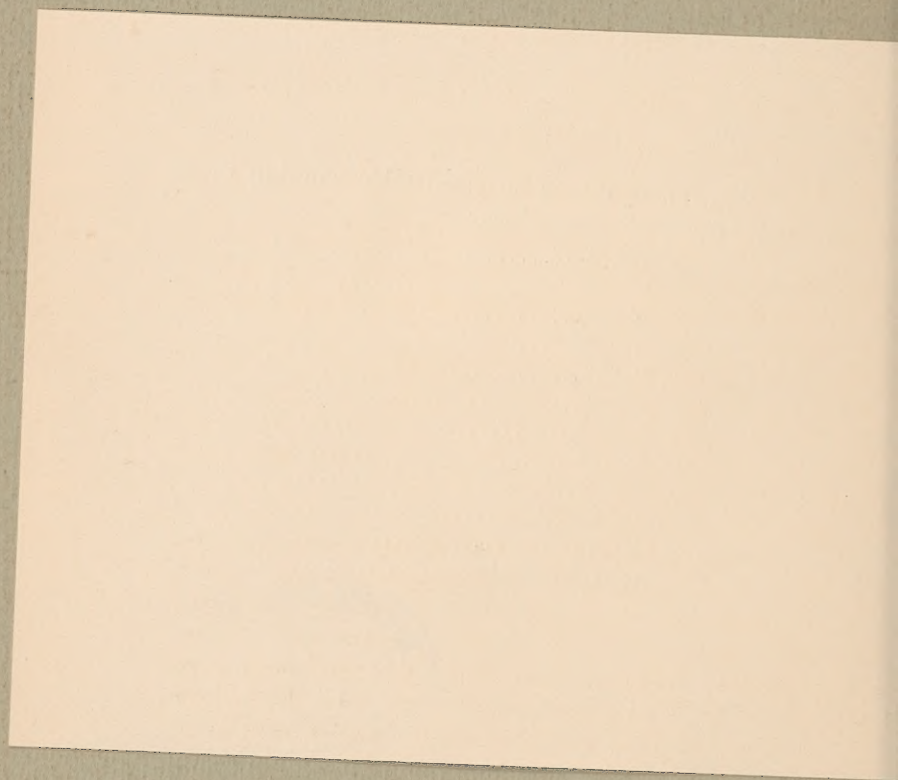
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THE following is a corrected table, showing the results of cataract extractions :

Vision	$\frac{20}{X}$ —	1
"	$\frac{20}{XX}+$	1
"	$\frac{20}{XX}$	4
"	$\frac{20}{XXX}$	6
"	$\frac{20}{XL}$	9
"	$\frac{20}{L}$	5
"	$\frac{20}{LXX}$	6
"	$\frac{20}{C}$	9
"	$\frac{20}{CC}$	5
"	$\frac{10}{CC}$	2
"	$\frac{1}{CC}$	1
Lost by suppuration		1





A REPORT OF FIFTY CASES OF EXTRACTION OF CATARACT WITHOUT IRIDECTOMY.*

BY OREN D. POMEROY, M. D.

THESE cases are reported in order to present some of the indications for and against the method of extraction without iridectomy. The results of the extractions are as follows:

Vision $\frac{20}{40}$	3	Vision $\frac{20}{60}$	9
" $\frac{20}{20}$	2	" $\frac{20}{60}$	3
" $\frac{20}{30}$	7	" counting fingers	
" $\frac{20}{12}$	14	at four feet	1
" $\frac{20}{10}$	4		—
" $\frac{20}{100}$	7		50

In three cases both eyes were operated on successfully. The visual results might have been better under certain circumstances. It appears that a pupillary membrane was operated on thirty-one times, leaving nine without operation. Most of these might have been further improved by an operation, but in some cases the patients lived at a distance and subsequent operations were inconvenient. Again, many were satisfied with the amount of sight obtained, and did not care for more operations. In

* Read before the American Ophthalmological Society, July 20, 1892.

thirteen cases, or about a third, astigmatism required to be corrected, and it is not improbable that other cases of astigmatism were overlooked. I have been astonished to see how much the vision in certain cases has been improved by a more careful correction of the refractive error. Moderate prolapse of the iris occurred in two cases with a somewhat peripheral pupil where operative interference seemed unnecessary. In two cases, both in young subjects for senile cataract, the lenses were swollen and encroached on the anterior chamber, making it difficult to pass the knife across, and the iris was wounded near the pupil, which caused the latter to be somewhat distorted, but the vision was good in each case. In another case the knife cut out a piece of iris, making a pupil something like that after an iridectomy; the healing was slow, but the ultimate result was good. Subsequently the appearance was the same as in iridectomy. In another case the iris became caught in the wound a day or two after the operation, and there was failure to properly close the wound. One or two applications of strong nitrate of silver sufficed to cause coaptation of the parts, and the case did well. There were three cases of prolapse of the iris occurring from one to three days after the operation and without assignable cause. Two of these were iridectomized at once with good result; the third was incised, cauterized, and iridectomized, with a result of vision $\frac{2}{80}$. Another case resulted in kerato-iritis, with partial closure of the pupil and a small opacity on the cornea, dependent, evidently, on a too thorough replacement of the iris by the repositor. The vision, however, became good after an operation.

Two other cases showed the pupil drawn far toward the wound, but neither incarcerated nor prolapsed consequent on loss of vitreous. In the first case the lens was inadvertently extracted in its capsule. After it was nearly

expelled the pressure was mostly removed from the cornea and considerable vitreous (one third to one quarter) escaped.

Immediately on the delivery of the lens I refused to manipulate the eye further than to lift the upper eyelid and observe the cornea deeply sunken into the globe, but in fair coaptation and with no prolapsus of the iris. This patient recovered without excessive reaction, but vitreous opacities were found. The vision was $\frac{3}{6}$. I could not account for the loss of vitreous in this case and also in the subsequent one. The latter, which is recorded as a failure, showed nothing unusual in the extraction until after the expulsion of the lens, when the Bowman spoon was used in manipulating the cornea so as to more perfectly restore the dislocated iris, the wound suddenly widely gaped, and from one quarter to one third of the vitreous suddenly escaped. No speculum was used; the eye was looking to the front, there was absolutely no faulty conduct on the part of the patient, and I could not in the least account for the accident. No violent reaction occurred; the pupil was drawn far upward without prolapsus or incarceration, but there has been circumcorneal injection and some photophobia most of the time since the operation, and the eyeball shows diminished tension. At one time the vision was $\frac{3}{6}$, but three months afterward it is not more than counting fingers at four feet.

I can not but feel that extraction of cataract is sometimes an exciting cause of sympathetic ophthalmia. Some years since, I reported to this society several cases of sympathetic ophthalmia following extraction of cataract. In this list of fifty extractions I had one case of extraction in the right eye, with no unusual reaction, but which was followed in two months by exudative iritis, with diminished tension in the left eye. Some of my colleagues did not regard this as a case of sympathetic ophthalmia.

In another of these cases a perfect extraction was done with a high visual result, and no secondary operation. In two years the patient returned to the hospital with the fellow eye far advanced in phthisis from iridochorioiditis, with no explanation of the cause of the trouble, except the operation on the fellow eye. The eye was red and irritable, and enucleation was at once done.

In none of these cases was iridectomy done except in those of prolapsed iris occurring one or more days after the extraction.

Some Details of the Operation.—Latterly the bichloride of mercury (one to ten thousand) has been used, bathing the eye freely with it before the operation and using it with some freedom during the operation. The instruments are all immersed in boiling water. Cocaine has been used, in the strength of from two- to four-per-cent. solutions, instilled fifteen minutes before the operation for three or four times. The pupil should be about half dilated, as in this condition the knife is passed across the anterior chamber with less risk of wounding the iris, according to my experience. If, however, the patient is nervous or lacking in self-control, the only alternative is ether or chloroform.

For the last year I have rarely used the spring speculum, as I have seen vitreous extruded in consequence of its use. It is not in the least difficult to do the section without it, in a majority of instances. The lower lid is cared for by the fixation forceps applied upon the lower portion of the eyeball very near to the cornea, while the upper lid is drawn up by the fingers of an assistant, or an elevator may be used, although it is not often necessary, and is less safe than the fingers. I have always used my right hand in operating, as I believe I do better with it than with the left. For the right eye the position is naturally at the head of the patient, and for the left the operator may stand on the

right side, reaching across to the left eye. This is just as convenient in operating as in that of the right eye. A rather broad Graefe knife is always chosen, and in making the section an imaginary equilateral triangle is laid on the cornea with the base upward. The puncture and counter-puncture correspond to the two upper angles of the triangle. The knife enters about midway in the limbus, and emerges at a corresponding point on the opposite side; there is often a tendency to make the counter puncture too deeply.

The section terminates at the margin of the sclera above, as nearly as possible, although in some cases, by an effort to avoid the iris, the incision may extend too far in the clear cornea. The latter condition seems to favor anterior synechia.

A properly performed simple extraction does not ordinarily result in more than a very small amount of bleeding, and often none at all. In order to avoid the iris, the knife should be passed slowly and very deliberately across the anterior chamber, being careful not to tilt it so as to lose aqueous, and as soon as the point emerges at the counter-puncture a long and a quick thrust should be made, completing half or more of the section; by that time the knife has so far passed by the iris that the section may be completed with sufficient deliberation.

The capsule is lacerated with the Graefe fleam-shaped cystotome near the center of the lens, being careful to avoid the upper periphery for fear of lacerating the iris or rupturing the zonula. I prefer to deliver the lens by means of the Daviel or Bowman spoon, one being placed on the sclera above and the other on the lower portion of the cornea.

The spoon is preferable to the finger from the fact that the compressive force may be applied more exactly where required than when the too wide finger is used, especially

if the pressure is used outside of the lid, as is generally the case. One great drawback to simple extraction is the difficulty of removing bits of lens matter after the iris has returned to its proper position. To avoid this, it is well to deliver the broken-up lens matter while the body of the lens is *in transitu*—that is, before the iris has been returned to its position—by a stroking movement of the spatula on the cornea, until the pupil appears black; this may be accomplished at about the time the body of the lens is extruded from the eye.

After thoroughly irrigating the eye with the bichloride solution I have latterly used eserine, in a solution of one grain to the ounce, although I do not feel certain of its value in preventing prolapsus of the iris; but, on the other hand, I have not been impressed with its tendency to induce iritis, as has been asserted by many. A piece of absorbent cotton dipped in the bichloride solution is then laid on the eye, and on this a sufficient piece of dry cotton, and the binocular bandage is applied. Quite recently, instead of this,*the sterilized vaseline with the bichloride (1 to 5,000) has been used on the cotton placed next to the eye; this prevents the dressing from sticking to the part and enables the eye to be opened without violence. On the next day the dressing is removed, and, if there has been no untoward symptom, little or no discharge on the dressing and no unusual swelling of the lid, the dressing is reapplied without opening the eye. This process is repeated for the next three or four days, when the bandage is removed and a shade placed over both eyes. I am not, however, superstitious about opening the eye at any time, provided the symptoms call for active interference. The principal point seems to be to do nothing to interrupt the healing of the corneal wound, or to cause it to open after slight adhesions have taken place. Atropine is used after three or four days.

In one case an early use of atropine apparently increased the intra-ocular pressure and forced open the wound and induced a prolapsus of iris. *The prolapsus of the iris is the great drawback to this operation.* In many instances the iris may be restored to position by external manipulation. If the anterior chamber is allowed to fill, the iris is much more likely to float back into position. Sometimes the iris is kept from returning by being pinched in the angles of the incision, and the manœuvre suggested by Knapp—of depressing the lower part of the cornea so as to make the wound gape—may overcome this difficulty. In a majority of instances, however, the repositor of Wecker is needed to restore the iris to position. I have observed frequently that if the pupil still remains with a little nick in it, pointing in the direction of the wound, after complete recovery we find the pupil of the same shape as at first. In one case great persistence was used in completely returning the iris, and a kerato-iritis resulted, leaving a small opacity of the cornea and a contracted and adherent pupil. The patient, however, recovered good vision after an operation.

The most insurmountable difficulty, however, results from prolapses occurring one or several days after the operation. These, in many instances, can not be satisfactorily accounted for. Swelling of lens matter and opening of the wound, or failure of the wound to close perfectly and retain the aqueous, or too early use of atropine, are more frequent causes of this accident. Any violence inflicted on the eye during recovery oftener causes prolapsus of the iris than is usually supposed, and where it is practicable it is well to tie the patient's hands so that by no possibility can mischief be inflicted by touching or rubbing the eye. Prout's wire apparatus over the dressing would seem justifiable. When prolapsus has occurred a day or more after the op-

eration I am in the habit of doing iridectomy under ether, as cocaine is not sufficient to quiet the eye at this time. I have heard that others have occasionally pushed the iris back after a twenty-four-hour's prolapse, but this manifestly can not often be done. It may be needless to remark here that iridectomy under these circumstances must needs be an imperfect operation.

Incising or cauterization of the prolapsus has also been done on some of these cases with success.

I believe that, in order to obtain the highest visual result, almost every case requires, sooner or later, a secondary operation on a pupillary membrane without necessarily reflecting on the character of the previous operation. The two-needle operation has been done more frequently than others, the cutting or tearing needle being displaced in many instances by some form of knife-needle (Knapp's), on the theory that the latter may be used to incise the membrane as well as to tear an aperture as with the ordinary needle. The knife-needle is also used to split the capsule (Knapp) without the intervention of the stop-needle. In very diaphanous membranes the ordinary needle has been used to displace them by pushing the membrane as far to one side as possible, sometimes twisting the needle so as to entangle it more perfectly on the needle point (Agnew). The procedure, in very dense membranes, of drilling an aperture by means of the needle, as suggested by the late Mr. Critchet, has also been practiced. Agnew's hook operation, sometimes using the blunt hook when the membrane has been punctured, has also been done. Forceps, back-toothed and others, have also been used to draw out the membrane. The instrument possessing the highest degree of effectiveness in incising the membrane seems to have been the Graefe knife. Iridotomy has also been done with this instrument. Since antiseptics has been practiced it

has seemed to the writer that the danger of secondary operations has been much diminished. Some of these cases have required three or four operations to clear the pupil. The operation has been done after three weeks, provided the eye was quiet, but in some cases it has been done to relieve the irritability of the eye where it seemed to depend on dragging of the iris on an adherent membrane.

The simple extraction gives a circular pupil, which, in the most favorable cases, yields more perfect visual results; but this advantage is often diminished by the fact that in many cases the pupil is drawn somewhat toward the corneal wound from a tendency of the iris to prolapse or become incarcerated in the wound, or to a possible wrinkling of the iris. The traumatism inflicted on the sphincter iridis in the delivery of the lens may also induce a partial paresis which might account for the displaced pupil. The greater likelihood of leaving lens matter behind in simple extraction is an undoubted objection to the operation.

There is probably less traumatism in this operation than where iridectomy is done, and a speedier recovery may reasonably be expected. My notes are not specific enough on this point to draw exact conclusions, but I have been impressed with the short duration of the healing process, some of these cases apparently having no reaction worthy of mention. I feel sure, in a general way, that repair in the better class of cases occurs more speedily than where iridectomy is done.

It might be supposed that there would be less *astigmatism* after simple extraction, but my cases show a considerable number where cylinders were needed.

The simple extraction is easier to do, as it is usually accompanied by little or no loss of blood and may be done with greater technical exactness, as the parts may be accurately inspected. Often, however, we have to confront a

small-sized pupil which is not always as dilatable as could be desired. In an operation on the membrane there is less room in which to work than in a pupil after iridectomy, and consequently more embarrassment in the manipulation. In lacerating the capsule in simple extraction there is more danger of wounding the iris than in the older operation.

It is an undoubted fact that in the cases of prolapsus of the iris we are much worse off than had there been a previous iridectomy done.

Although I propose to continue doing the simple extraction, I can not assert that, on the whole, it is a great improvement on the older operation.



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